

### **Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the above-captioned application.

### **Listing of Claims:**

Claims 1-308 (canceled)

309. (currently amended) A system for detecting an analyte in a fluid comprising:
- a body;
  - a light source disposed within the body;
  - a cartridge, wherein the cartridge is configured to be removably positionable in the body, and wherein the cartridge comprises a cartridge body and a sensor array disposed within the cartridge body, and wherein the sensor array comprises:
    - a supporting member comprising a plurality of cavities fabricated within the supporting member ~~according to predetermined spacings~~ to form an ordered array;
    - a particle, wherein the particle is positioned in a cavity, and wherein the particle comprises a receptor coupled to a polymeric bead, and wherein the particle is configured to produce a signal when the particle interacts with an analyte during use, and wherein the cavity is configured such that a particle is substantially contained within the cavity during use; ~~and~~
    - a plurality of assembled layers comprising a barrier layer and a spacer layer;
    - wherein the barrier layer is positioned over the cavity and is configured to inhibit dislodgment of the particle during use, the barrier layer comprising a substantially transparent cover plate positioned such that a first channel is formed between an upper surface of the supporting member and the barrier layer, and wherein the fluid passes through the first channel during use; and

wherein the spacer layer forms a second channel under the sensor array,  
and wherein the fluid passes through the second channel during  
use; and

a detector disposed within the body, wherein the detector is configured to detect the signal produced by the interaction of the analyte with the particle during use;  
wherein the light source and the detector are positioned such that light passes from the light source, to the particle, and onto the detector during use.

Claim 310 (cancelled)

311. (previously presented) The system of claim 309, further comprising a sample input port, wherein the sample input is positioned on the body, and wherein the sample input port is coupled to the sensor array such that samples introduced into the input port are transferred to the sensor array.

312. (previously presented) The system of claim 309, further comprising a sample input port, wherein the sample input is positioned on the body, and wherein the sample input port is coupled to the sensor array such that samples introduced into the input port are transferred to the sensor array, and wherein the sample input port is configured to receive a syringe.

313. (original) The system of claim 309, further comprising a sample input port and a filter, wherein the sample input is positioned on the body, and wherein the sample input port is coupled to the sensor array such that samples introduced into the input port are transferred to the sensor array, and wherein the filter is coupled to the sample input port.

314. (original) The system of claim 309, further comprising a fluid cartridge coupled to the body and the sensor array.

315. (previously presented) The system of claim 309, further comprising:  
an electronic controller disposed in the body and coupled to the sensor array, the light  
source, and the detector;  
wherein the electronic controller is configured to control the operation of the sensor array  
system.
316. (original) The system of claim 309, further comprising a global positioning system  
coupled to the body.
317. (original) The system of claim 309, further comprising a data transfer system.
318. (original) The system of claim 309, wherein the detector comprises a monochrome  
detector.
319. (original) The system of claim 309, wherein the detector comprises a color detector.
320. (original) The system of claim 309, wherein the light source comprises at least one light-  
emitting diode.
321. (original) The system of claim 309, wherein the light source comprises a light emitting  
diode.
- Claim 322 (cancelled)
323. (original) The system of claim 309, further comprising a fluid delivery system coupled to  
the supporting member.
324. (original) The system of claim 309, wherein the detector comprises a charge-coupled  
device.

Claim 325 (cancelled)

326. (previously presented) The system of claim 309, wherein the system comprises a plurality of particles positioned within the plurality of cavities, and wherein the system is configured to substantially simultaneously detect a plurality of analytes in the fluid.

327. (original) The system of claim 309, wherein the particle ranges from about 0.05 micron to about 500 microns.

328. (original) The system of claim 309, wherein a volume of the particle changes when contacted with the fluid.

329. (previously presented) The system of claim 309, wherein the particle further comprises a first indicator and a second indicator, wherein the first and second indicators are configured to be coupled to the receptor, wherein the interaction of the receptor with the analyte causes the first and second indicators to interact such that the signal is produced.

330. (previously presented) The system of claim 309, wherein the particles further comprises an indicator, wherein the indicator is associated with the receptor such that in the presence of the analyte the indicator is displaced from the receptor to produce the signal.

331. (original) The system of claim 309, wherein the supporting member comprises silicon.

Claims 332-334 (cancelled)

335. (original) The system of claim 309, wherein the supporting member comprises a plastic material.

336. (original) The system of claim 309, wherein the supporting member comprises a dry film photoresist material.

337. (previously presented) The system of claim 309, wherein the cavity is configured such that the fluid entering the cavity passes through the cavity during use.

338. (original) The system of claim 309, further comprising a pump coupled to the supporting member, wherein the pump is configured to direct the fluid towards the cavity.

Claim 339 (cancelled)

340. (original) The system of claim 309, further comprising a vacuum apparatus coupled to the sensor array, wherein the vacuum apparatus is configured to pull the fluid through the cavity during use.

341. (previously presented) The system of claim 309, wherein the sensor array is positioned within a cartridge, and wherein the cartridge is removable from the body.